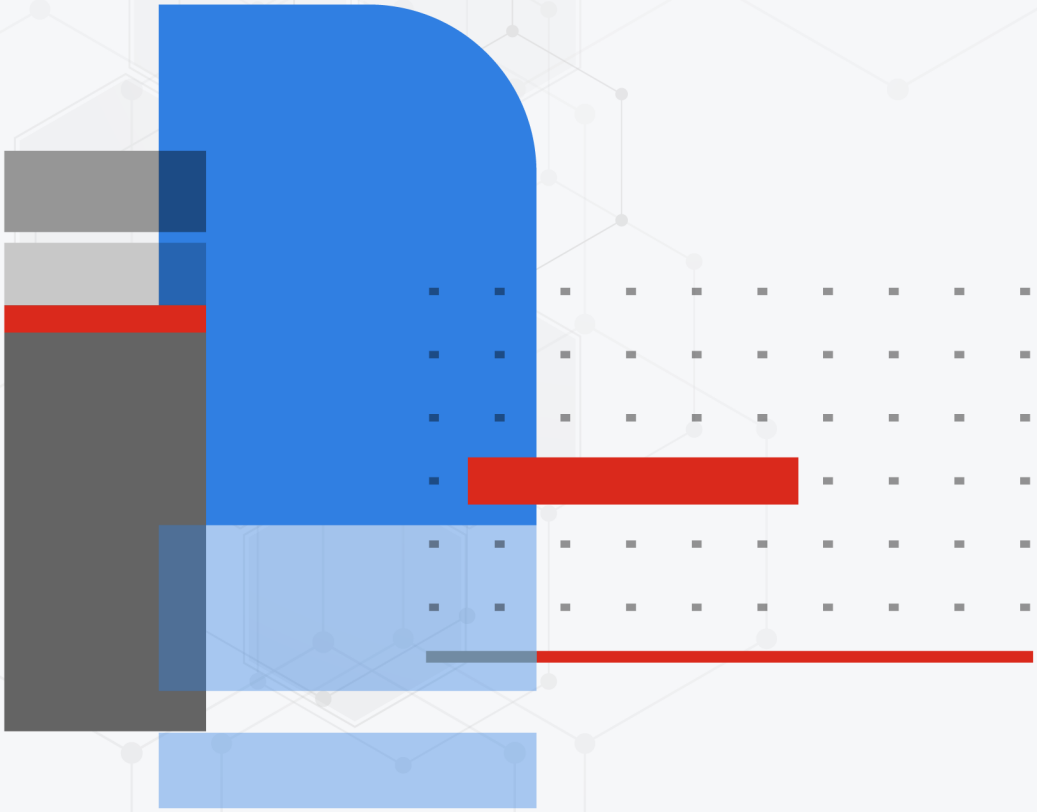
Examples

FortiManager 7.4.0



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May 15, 2023
FortiManager 7.4.0 Examples
02-740-909880-20230515

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Change Log

Date	Change Description
2023-05-15	Initial release.

Introduction

This document serves as a reference guide to common FortiManager 7.4 configuration and deployment scenarios. The scope of this document is to explain specific examples and include information required for those examples to work. The examples rely on the other documents to provide full product information.

For further FortiManager information, refer to the FortiManager Administration Guides available on the Fortinet Docs Library.

This section includes configuration examples for FortiManager 7.4:

Device Manager

This section contains the following topics:

Exporting a policy package from one FortiManager to another

In this example, you will learn how to export a policy package from one FortiManager to another FortiManager.

To export a policy package from one FortiManager to another FortiManager:

1. Select a FortiManager policy package and installation target you want to export:
   a. Select a FortiManager policy package and its installation target.
      For example,
      Policy Package: PP_001
      Installation Target: Device1
2. Download the latest revision:
   a. Go to *Device Manager* > *Device & Groups* > and double-click the installation target device (Device1 in this example).
   b. Go to *Dashboard* > *Configuration and Installation* > *Total Revisions*.
   c. Download the latest revision (for example, Revision 1).
3. Add the device to the second FortiManager:
   a. Go to your second FortiManager.
   b. Go to *Device Manager* > *Device & Groups* > and click *Add Device*. The Add Device wizard displays.
      Its SN must be similar to the one you got the revision from. It can be the same as the original SN, or you can take the SN prefix (the first six characters) and append 10 digits to it.
      For example, FG200D12345985242 is the original SN.
      Prefix: FG200D
      Appended 10 Digits: 0000000001
      The new SN will be: FG200D0000000001.
   c. Select *Add Model Device* and complete the wizard.
4. Import the revision to the second FortiManager:
   a. On your second FortiManager device, go to *Device Manager* > *Device & Groups* and double-click the model device. The Device Dashboard displays.
   b. Go to *Dashboard* > *Configuration and Installation* > *Total Revisions*.
   c. Right-click the empty revision list and select *Import Revision* > *Revision 1*.
   d. Go to *Device Manager* > *Device & Groups*.
   e. Right-click your model device and select *Import Policy*. The wizard displays.

f. Complete the wizard.

g. Go to *Policy & Objects*. The policy package and its used objects are displayed.

For further FortiManager information, refer to the FortiManager Administration Guides available on the Fortinet Document Library.

VPN Manager

This section contains the following topics:

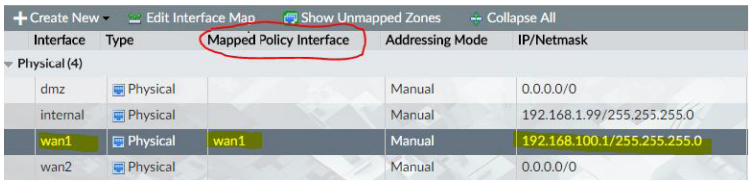
Configuring a full mesh VPN topology within a VPN console

This is an example on how to configure a simple full mesh VPN with:

- Three FortiGate (FGT) devices
- A pre-shared key for authentication
- An auto-up tunnel setting
- Static routes

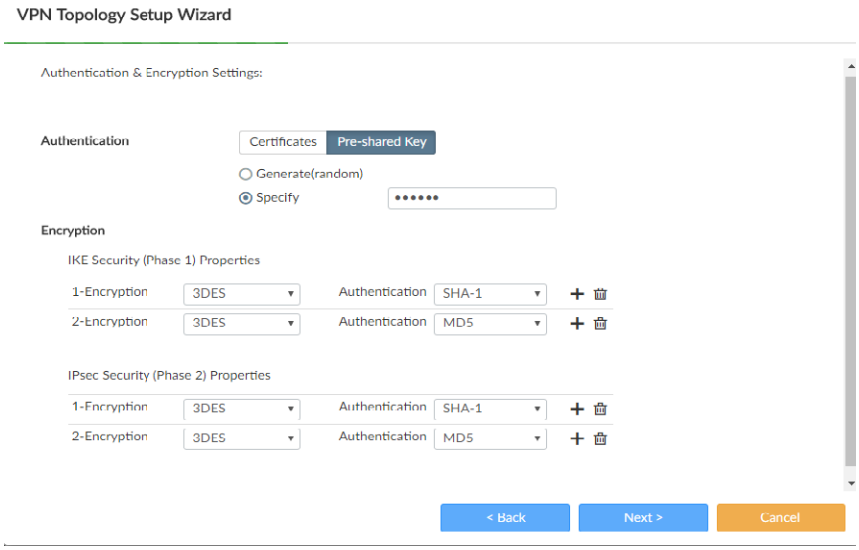
To configure a full mesh VPN topology within a VPN console:

1. Add FortiGate devices and map all interfaces:
   a. Go to *Device Manager*. Add three FortiGate devices by clicking *Add Device*. Follow the wizard to add each device.
   b. Go to *Policy & Objects* > *Policy Packages* and define the *Zone* interfaces.
   c. Go to *Device Manager* and select a device.
   d. Go to *System* > *Interface* and map the interfaces to the *Zone* interfaces.



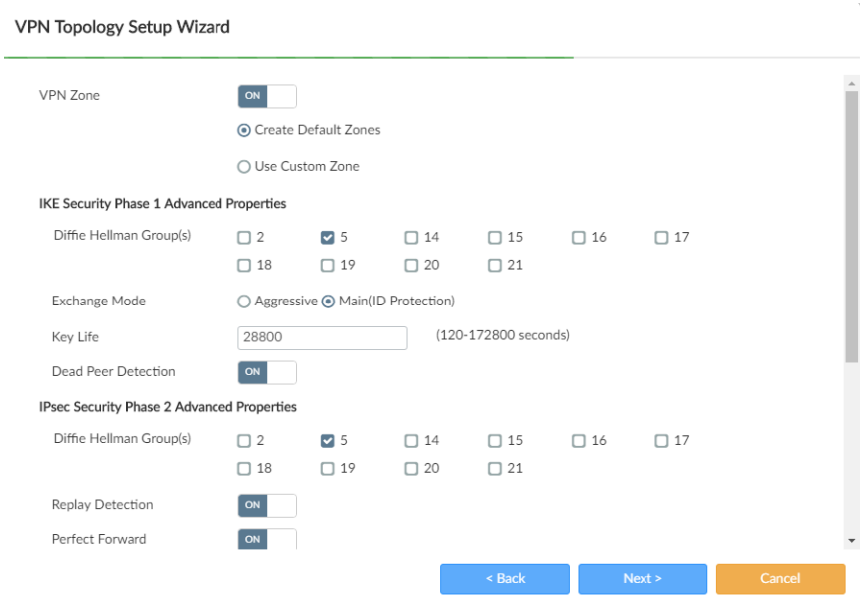
2. Create firewall addresses for protected subnets:
   a. Go to *Policy & Objects* > *Firewall Objects* > *Address* to manage the firewall addresses.
   b. VPNs only support firewall addresses with the type set to *subnet (IP/Netmask)*. The firewall addresses will be used as protected subnets to generate static routes among the FortiGate devices.
3. Create a VPN community:
   a. Go to *VPN Manager* > *IPsec VPN Communities* > *Create New*.
   b. Set the *VPN Topology* type to *Site to Site*.
   c. Define the *Authentication* method with a *Pre-shared Key*.

d. Specify the encryption and hash methods.

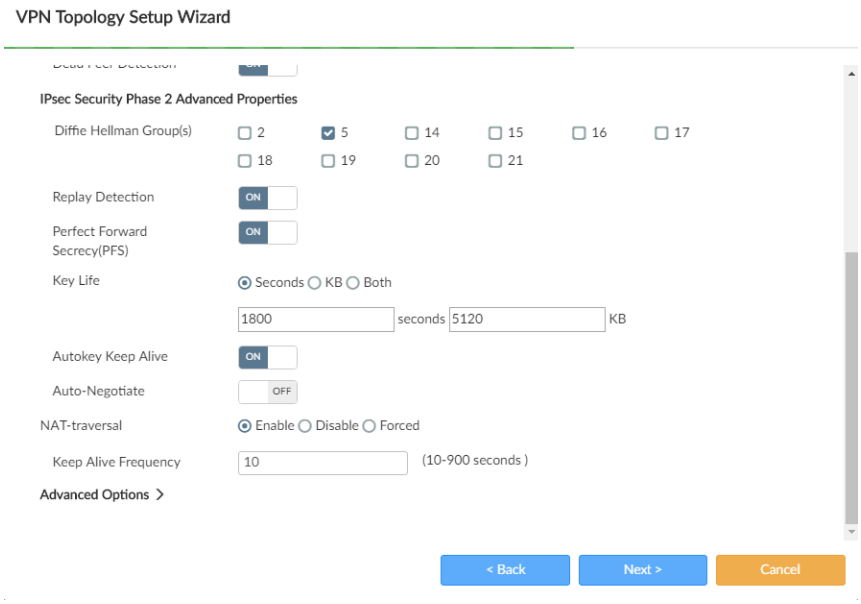


e. After defining the authentication methods and encryption properties, click *Next*.

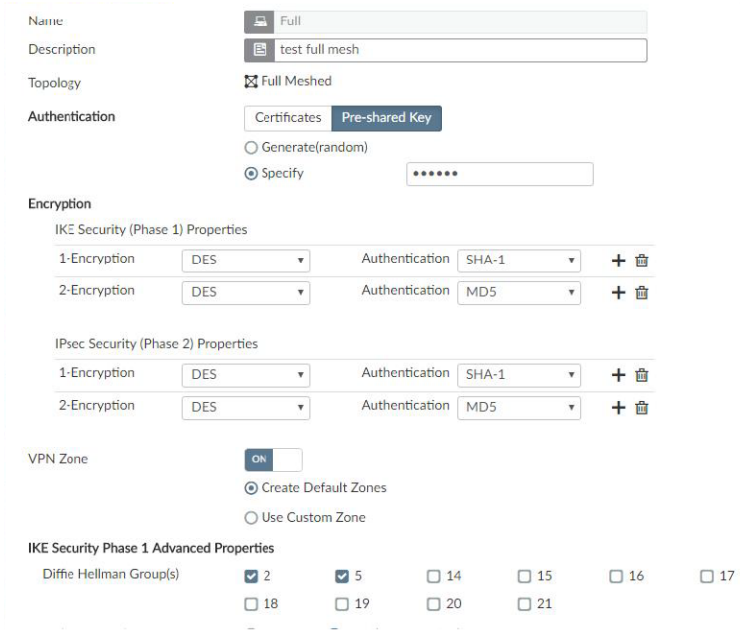
f. Configure the *VPN Phase 1* and *Phase 2* settings.



g. For the *IPSec Phase 2* setting, set the tunnel to *Auto-Negotiate*.



VPN configuration summary:

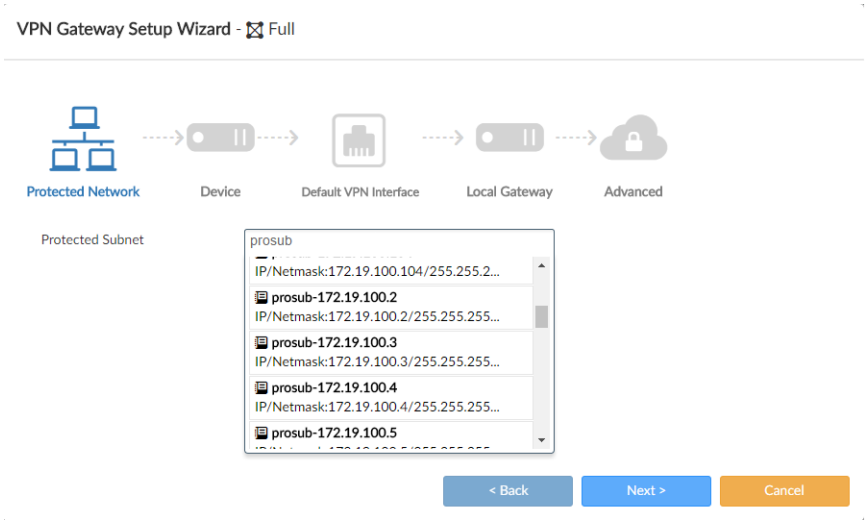


4. Add a VPN gateway:

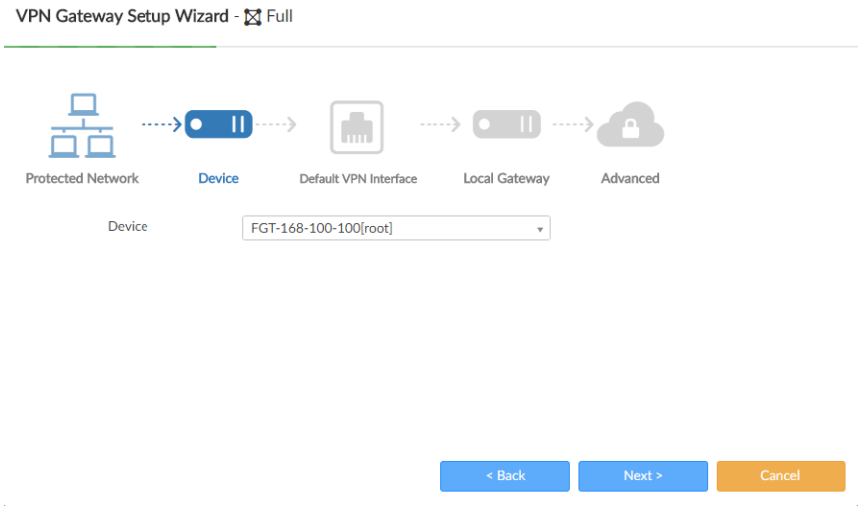
a. Go to *VPN Manager* > *IPsec VPN Communities* and select your VPN community.

b. Right-click the community and select *Add Managed Gateway*.

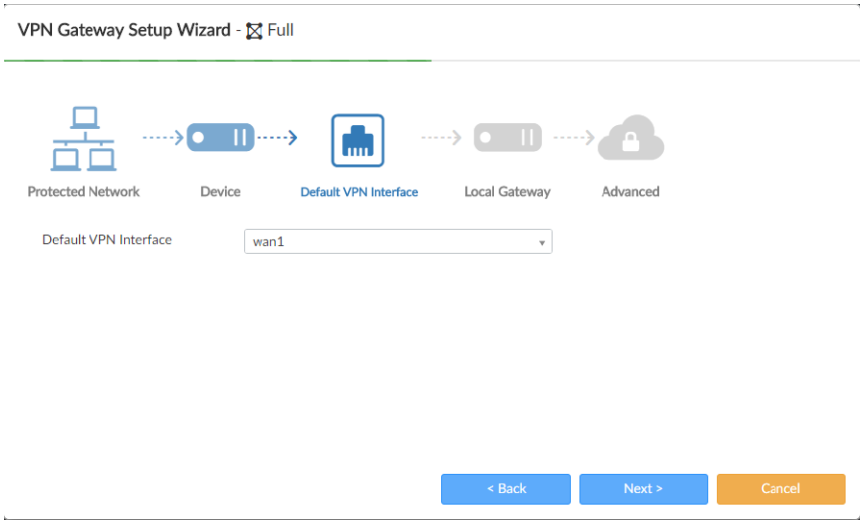
c. Add a *Protected Network*. There can be more than one protected networks.



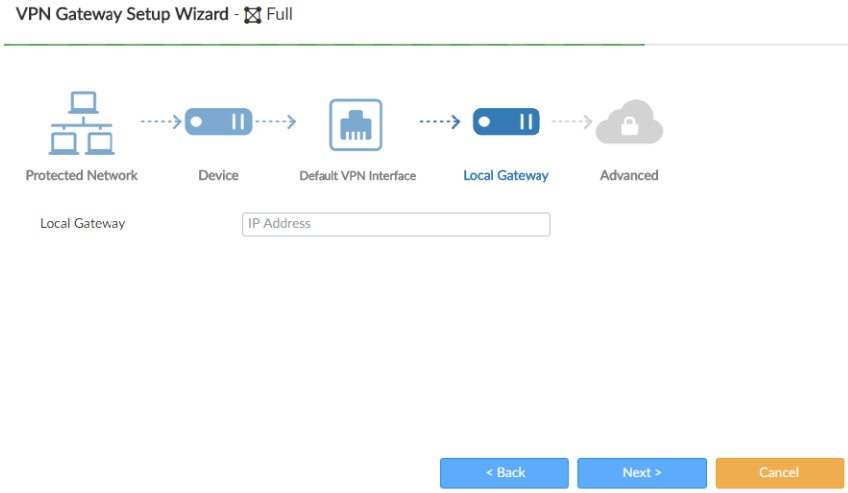
d. Select a *Device*.



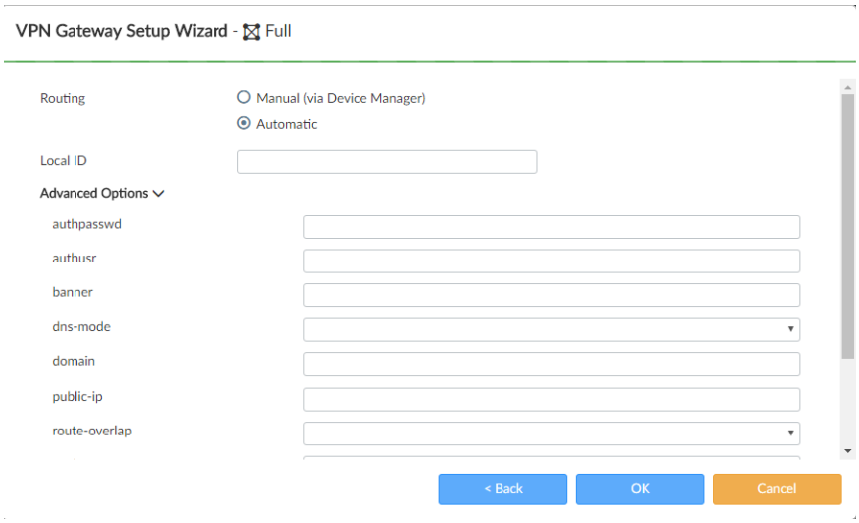
e. Select a *Default VPN Interface*. The default VPN interface should have a valid IP and be mapped.



i. Optionally, specify the *Local Gateway*. This option can be left blank in most cases.

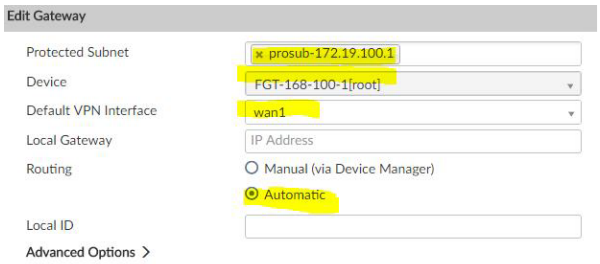


f. Go to *Routing* and select *Automatic* to generate static routes.

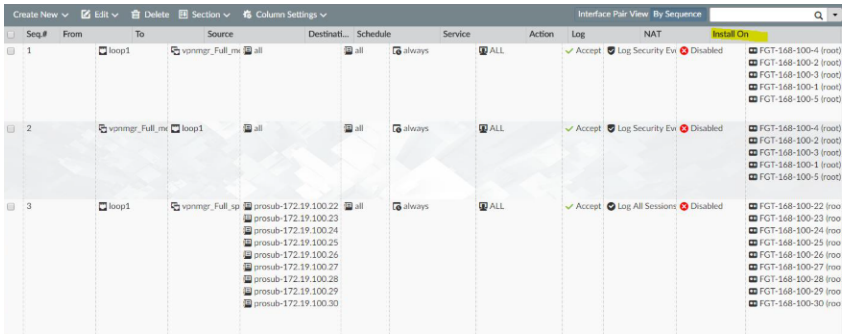


i. If *Manual* is selected, go to the *Device Manager* to set the IP on the relevant IPSec interfaces and define the routings manually.

VPN gateway configuration settings summary:



5. Create firewall policies:
   a. Go to *Policy & Objects* > *Policy Package* to create policies among the default VPN zones and protected-subnet interfaces.
   b. Use the *Install On* option to restrict policies applied on specific FortiGate devices.



   c. Remember to create policies for bi-directional traffic.

For further FortiManager information, refer to the FortiManager Administration Guide available on the Fortinet Document Library.

System Settings

This section contains the following topics:

Configuring and debugging FortiManager HA clusters

You can configure two or more FortiManager units in a high availability (HA) cluster. You can also generate and download a debug log for each unit in a FortiManager HA cluster.

The following is an overview of configuring FortiManager units in an HA cluster:

1. Configure the primary FortiManager unit. See Configuring the primary FortiManager unit in an HA cluster on page 14
2. Configure one or more backup FortiManager units. See Configuring backup FortiManager units in an HA cluster on page 15
3. If you encounter problems, review the debug log for each unit in an HA cluster. See Generating and downloading HA debug logs on page 15.

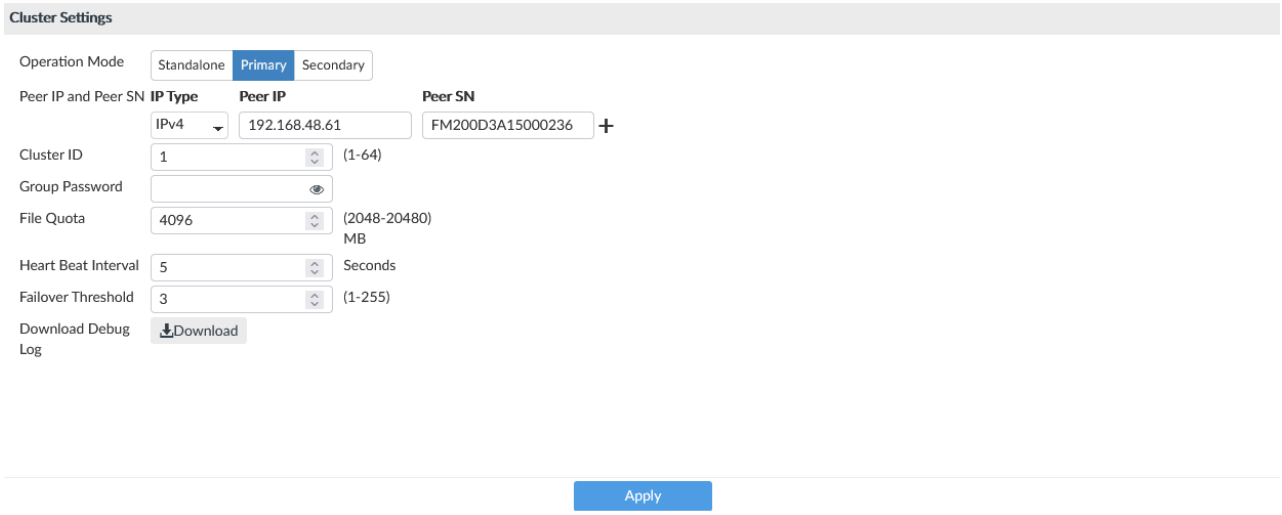
Configuring the primary FortiManager unit in an HA cluster

You can configure one FortiManager unit to be the primary unit in a high availability (HA) cluster. You must know the IP address and serial number of the FortiManager units that will be configured as backup (also called secondary or peer) units in the HA cluster to complete this procedure.

To configure the primary FortiManager unit:

1. Go to *System Settings* > *HA*.
2. Set *Operation Mode* to *Primary*.
3. In the *Peer IP* box, enter the IP address of the backup FortiManager unit.
4. In the *Peer SN* box, enter the serial number of the backup (secondary or peer) FortiManager unit.

5. Click + to add additional backup FortiManager units to the HA cluster.



6. Click *Apply*.

Configuring backup FortiManager units in an HA cluster

You can configure up to four FortiManager units as backup (also called secondary or peer) units in an HA cluster. You must know the IP address and serial number of the primary FortiManager unit in the HA cluster to complete this procedure.

To configure the backup FortiManager unit:

1. Go to *System Settings* > *HA*.
2. Beside *Operation Mode*, select *Secondary*.
3. In the *Peer IP* box, enter the IP address of the primary FortiManager unit.
4. In the *Peer SN* box, enter the serial number of the primary FortiManager unit.
5. Click *Apply*.

Generating and downloading HA debug logs

You can run a command to generate a debug log for each FortiManager unit in an HA cluster, and then you can download the logs using the GUI.

To generate a debug log:

1. On the primary or backup (secondary) FortiManager unit in an HA cluster, enter the following command:
   `diagnose debug application ha 255`

To download a debug log:

1. Go to *System Settings* > *HA*.
2. Next to *Download Debug Log*, click *Download*.
3. Save the log file (`ha-<date>.log`) to your local computer. It can be opened in a text editor.

Creating administrator accounts with restricted access

When you create an administrator account in FortiManager, by default the account grants access to all ADOMs and all policy packages. However, you can configure administrator accounts with restricted access to the following items:

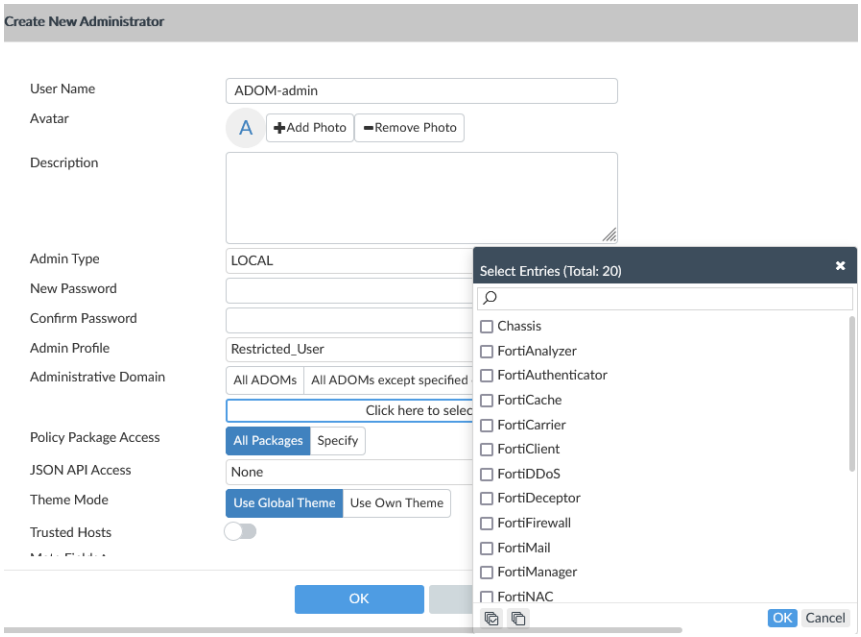
- ADOMs - see Restricting administrator access to ADOMs on page 16
- Device groups - see Restricting administrator access to device groups on page 18
- Policy packages - see Restricting administrator access to policy packages on page 19

Restricting administrator access to ADOMs

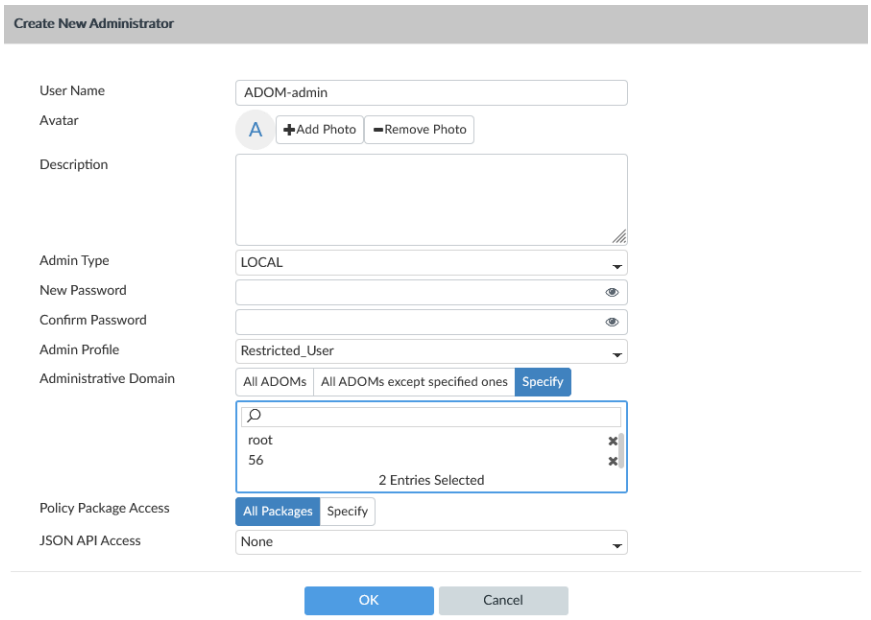
When you create an administrator account, you can specify which ADOMs that users of the account can access. This topic describes the different methods you can use to restrict access.

To create an administrator account and specify ADOM access:

1. Go to *System Settings* > *Administrators*.
2. Click *Create New*.
3. Beside *Administrative Domain*, click *Specify*, and then select the ADOMs that the administrator account can access.



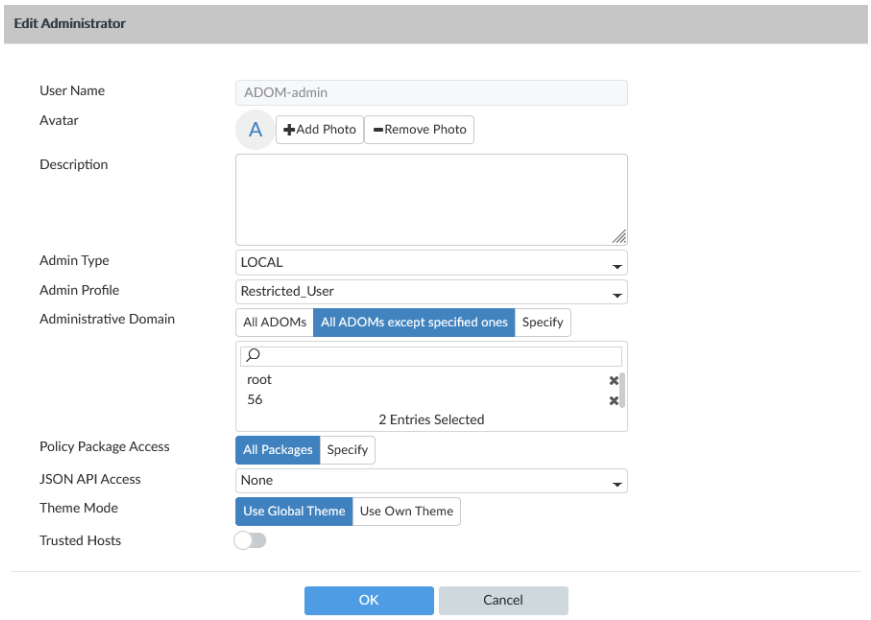
For example, select only the *root* and *56* ADOMs.



4. Set the remaining options, and click *OK*.
   When the administrator logs in to FortiManager, they can only access the specified ADOMs. In this example, the specified ADOMs are *root* and *56*.

To create an administrator account and exclude access to specific ADOMs:

1. Go to *System Settings* > *Administrators*.
2. Click *Create New*.
3. Beside *Administrative Domain*, click *All ADOMs except specified ones*, and then select the ADOMs that you do not want the administrator account to access.
   In this example, the *root* and *56* ADOMs are excluded from access.



4. Set the remaining options, and click *OK*.
   When the administrator logs in to FortiManager, they can access all ADOMs except for the ones specified. In this example, they can access all ADOMs except *root* and *56*.

Restricting administrator access to device groups

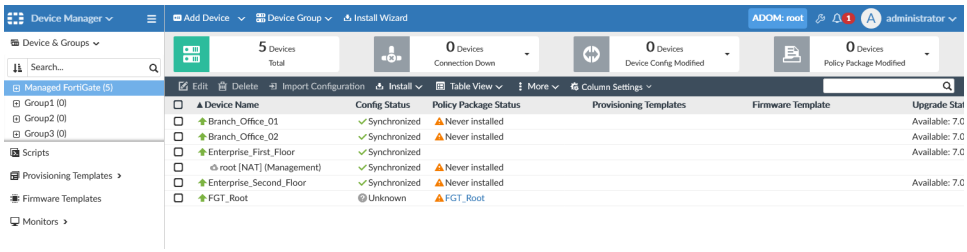
On the *Device Manager* pane, you can create device groups and add devices to the different groups. If you are using ADOMs, select the ADOM, and then create the device group.

When you create an administrator account, you can specify which ADOMs the account can access, and which device groups can be accessed in those ADOMs.

This topic describes how to create a device group and how to restrict administrator access to device groups.

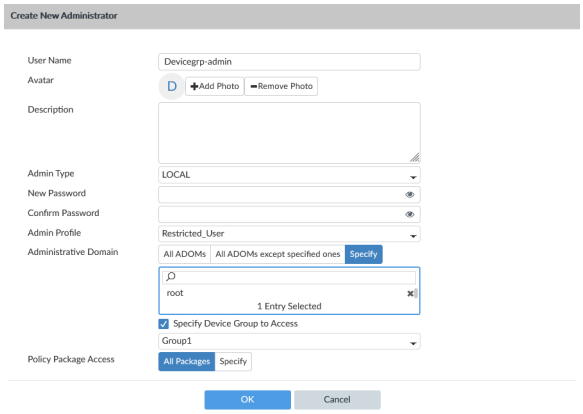
To create a device group:

1. Go to *Device Manager* > *Device & Groups*.
2. If you are using ADOMs, select the ADOM that you are creating a device group in. Otherwise skip this step.
3. In the *Device Group* dropdown menu, click *Create New Group*.
4. Enter a name for the group and add devices to it, then click *OK*.
   In this example, the root ADOM contains *group1*, *group2*, and *group3*.

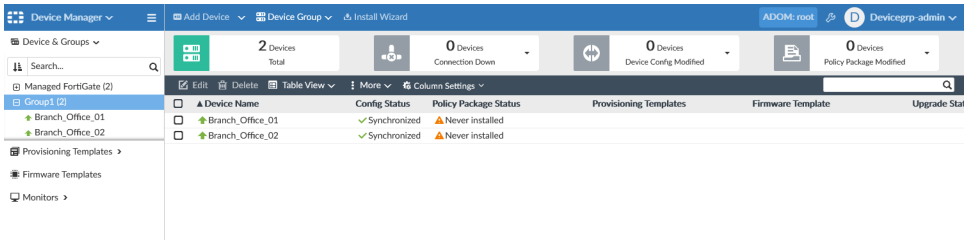


To specify admin access to device groups:

1. Go to *System Settings* > *Administrators*.
2. Click *Create New*.
3. Beside *Administrative Domain*, click *Specify*.
4. Select the ADOM that contains the device group. Select only one ADOM.
5. Select *Specify Device Group to Access*, and then select the device group.
   In this example, *group1* is specified.



6. Click *OK*.
   When the administrator logs in to FortiManager, they can only access the specified device group on the *Device Manager* pane. In this example, they can only access *group1*.



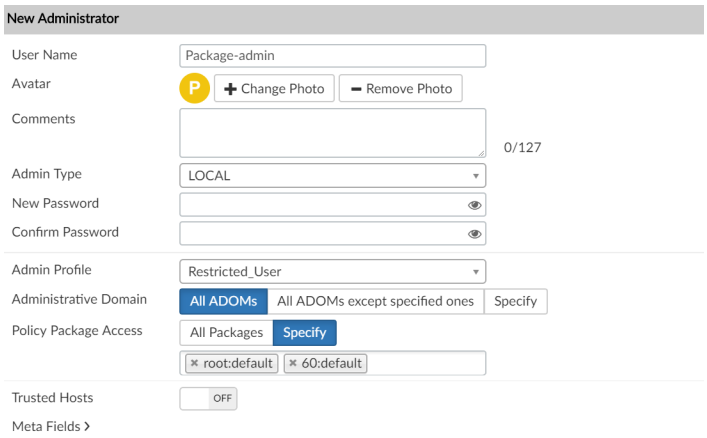
Restricting administrator access to policy packages

When you create an administrator account, you can specify which policy packages that administrator can access.

To specify admin access to policy packages:

1. Go to *System Settings* > *Administrators*.
2. Click *Create New*.

3. Beside *Policy Package Access*, click *Specify*, and specify which policy packages can be accessed.
   In the following example, administrators can access the *root* and *60* policy packages.



4. Set the remaining options, and click *OK*.
   When the administrator logs in to FortiManager, they can only access the specified policy packages. In this example, the specified policy packages are *root:default* and *60:default*.

Others

This section contains the following topics:

Managing FortiAnalyzer from FortiManager

This section contains the following topics:

Adding FortiAnalyzer to FortiManager

You can add a FortiAnalyzer unit to FortiManager and use FortiManager to manage FortiAnalyzer, but you must add the FortiAnalyzer unit to an ADOM used for central management, which is similar to adding FortiGate units to FortiManager for central management.

You can use the following methods to add FortiAnalyzer units to FortiManager:

- In FortiManager, use the *Add FortiAnalyzer* wizard in the *Device Manager* pane.
- In FortiAnalyzer, enable central management, and then go to FortiManager to authorize the device for central management.

This topic includes the following sections:

Preparing to add FortiAnalyzer to FortiManager

When using FortiManager to manage FortiAnalyzer, it is recommended to use a FortiAnalyzer unit with factory settings or a FortiAnalyzer unit that has been reset to the factory settings (`factory-reset`). A FortiAnalyzer unit with factory settings helps avoid conflicts when FortiManager synchronizes the device database to FortiAnalyzer.

To prepare FortiAnalyzer for management by FortiManager:

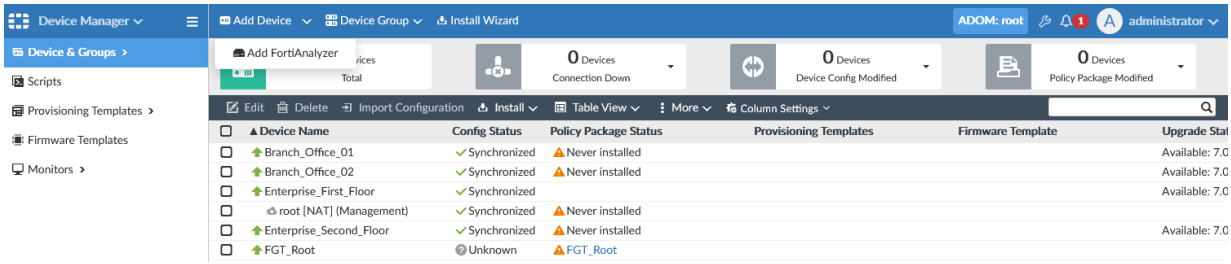
1. On the FortiAnalyzer unit, enable fgfm access on the interface used to connect to FortiManager.
```
config system interface
edit "port1"
set ip 10.3.121.142 255.255.0.0
set allowaccess fgfm
next
end
```
2. Create an ADOM with the same name as the ADOM in FortiManager, such as *manage_remote_faz*. FortiAnalyzer and FortiManager must have an ADOM of the same name. When you add FortiAnalyzer to FortiManager, add it to the ADOM of the same name.
3. Set storage settings for the ADOM.

Using the wizard to add FortiAnalyzer to FortiManager

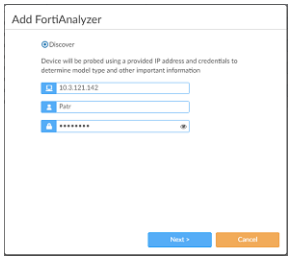
This section describes how to use the *Add FortiAnalyzer* wizard to add FortiAnalyzer to FortiManager.

To add FortiAnalyzer to FortiManager:

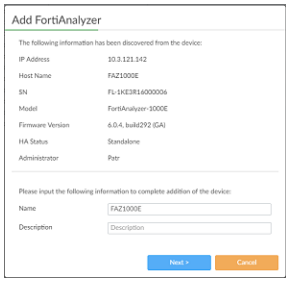
1. On FortiManager, ensure that FortiAnalyzer Features are disabled.
   a. Go to *System Settings* > *Dashboard*.
   b. In the *System Information* widget, ensure that *FortiAnalyzer Features* are toggled *Off*.
2. Ensure that the ADOM mode is set to normal by using the following CLI command:
```
config system global
set adom-mode normal
end
```
3. Go to *Device Manager*, and select a central management ADOM, such as *manage_remote_faz*. The FortiAnalyzer unit should contain an ADOM of the same name. In this example, both FortiAnalyzer and FortiManager have an ADOM named *manage_remote_faz*.
4. On the *Device & Groups* tab, add the FortiAnalyzer unit.
   a. From the *Add Device* menu, select *Add FortiAnalyzer*.



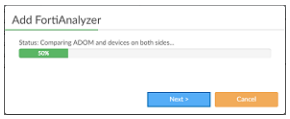
   The *Add FortiAnalyzer* wizard is displayed.
   b. Type the FortiAnalyzer IP address, username, password, and click *Next*.



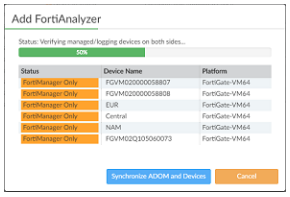
After FortiManager discovers the device, device information is displayed.



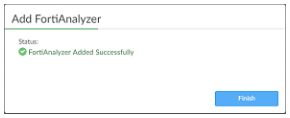
c. Click *Next* to continue.



FortiManager automatically compares ADOMs and devices on both FortiAnalyzer and FortiManager and provides the comparison and verification results.



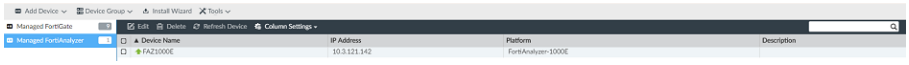
d. Click *Synchronize ADOM and Devices* to continue.
Devices are synchronized between FortiAnalyzer and FortiManager, and FortiAnalyzer is added to FortiManager.The synchronized devices are added to FortiAnalyzer as logging-mode FortiGates.



FortiAnalyzer is added to FortiManager.

e. Click *Finish*.

5. Go to *Device Manager* > *Device & Groups* to view FortiAnalyzer in the *Managed FortiAnalyzer* group.



Additional information

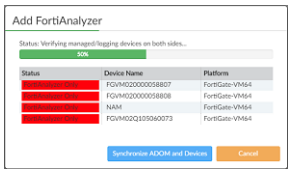
This section describes some of the other scenarios you might encounter when adding FortiAnalyzer units to FortiManager.

Missing ADOM

If the current ADOM in FortiManager does not exist on FortiAnalyzer, FortiManager automatically creates an ADOM with same name and version on FortiAnalyzer before starting to synchronize the device list.

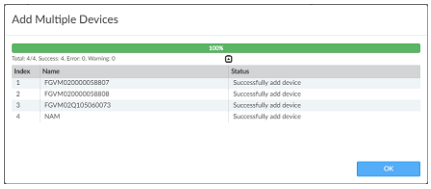
Unknown or mismatched FortiGate devices

If FortiAnalyzer is receiving logs from FortiGate devices that do not exist on FortiManager, FortiManager identifies the devices.



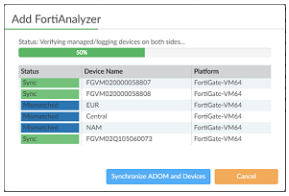
FortiManager automatically attempts to discover the FortiGates.

FortiManager can add the FortiGates and retrieve configurations for the FortiGates when adding the FortiAnalyzer unit.

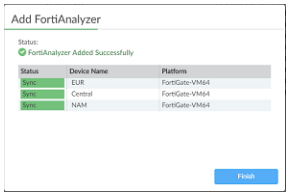


If one device fails to add or retrieve, FortiManager fails to add FortiAnalyzer.

If the same FortiGate device exists on both FortiManager and FortiAnalyzer, but with differences, FortiManager considers the device to be *Mismatched*.



FortiManager tries to synchronize the device settings to FortiAnalyzer.



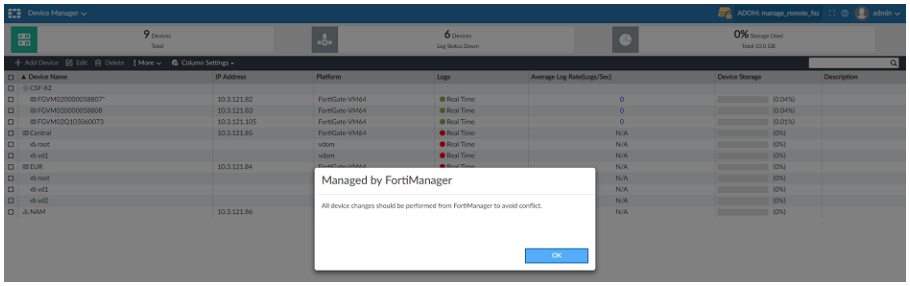
If any errors occur during the synchronization step, FortiManager fails to add FortiAnalyzer.

Viewing managed FortiAnalyzer behavior

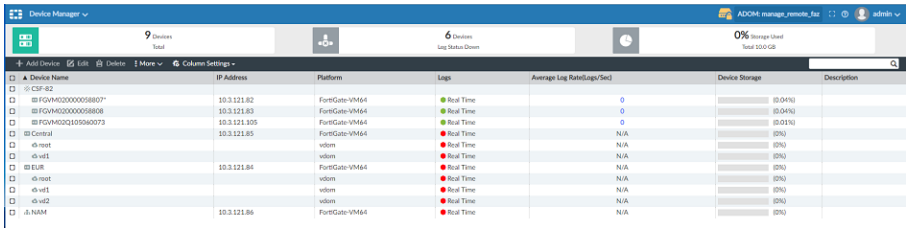
After FortiManager manages the ADOM with FortiAnalyzer in it, you should use FortiManager to perform changes on all devices in the ADOM. This topic describes the behavior you will view in the GUI for a FortiAnalyzer unit that is managed by FortiManager.

To view managed FortiAnalyzer behavior:

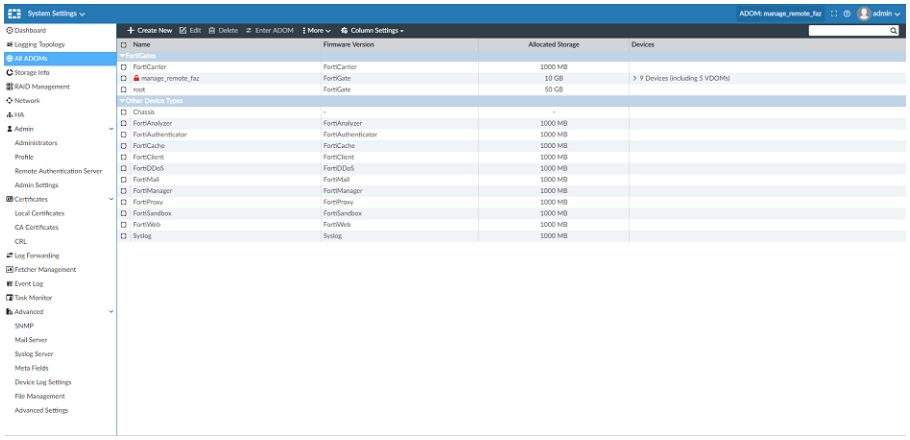
1. Log in to the FortiAnalyzer unit.
2. Go to the *Device Manager* pane.
   The *Managed by FortiManager* message is displayed.



3. Click *OK*.
   Notice the *Lock* icon displayed on top bar, and notice that the *Add Device*, *Edit*, and *Delete* buttons are unavailable.



4. Go to *System Settings* > *All ADOMs*.
   Notice the lock icon beside the ADOM that is managed by FortiManager. You can no longer edit devices in the ADOM.

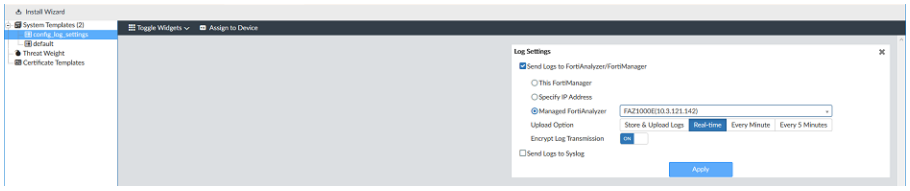


Centrally configuring FortiGate to send logs to managed FortiAnalyzer

After adding FortiAnalyzer to FortiManager, the device list is also synchronized to FortiAnalyzer. To make these FortiGate devices send log to FortiAnalyzer, you can use provisioning templates to centrally configure the log settings for FortiGates.

To centrally configure logging:

1. In FortiManager, go to *Device Manager* > *Provisioning templates*.
2. Create a new blank system template.
   a. In the content pane, click *Create New*.
   b. Type a name for the system template, and click *OK*.
   The system template is created.
   c. Select the system template, and click *Edit*.
   The template opens for editing. You can enable the *Log Settings* widget by selecting it from the *Toggle Widgets* dropdown.



   d. In the *Log Settings* widget, select *Send Logs to FortiAnalyzer/FortiManager*.
   e. Select *Managed FortiAnalyzer*, and select the unit from the drop-down list.
   f. Click *Apply*.
3. Assign the system template to FortiGates.
4. Install the system template to FortiGates.

Viewing logs and reports for managed FortiAnalyzer units

After you add FortiAnalyzer to the ADOM in FortiManager, the following FortiAnalyzer panes are available in FortiManager:

- FortiView
- Log View
- FortiSoC
- Reports

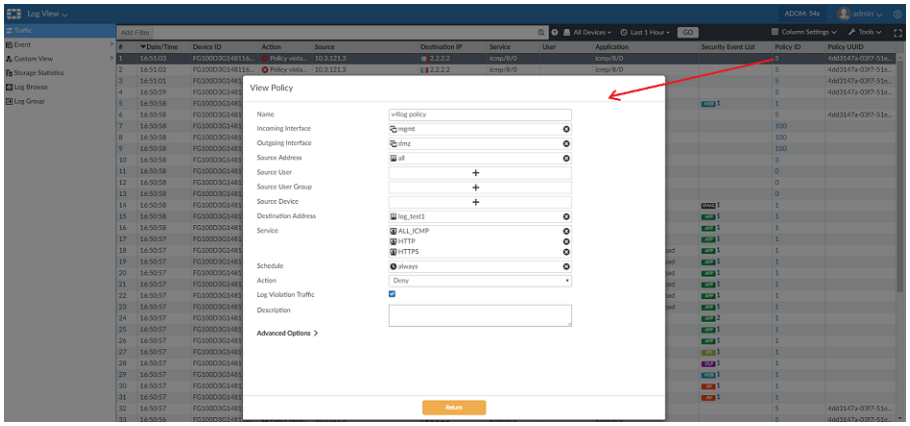
All FortiAnalyzer functionality is available, except for the following:

- Importing and exporting a report template
- Importing and exporting a chart
- Importing and downloading a log file

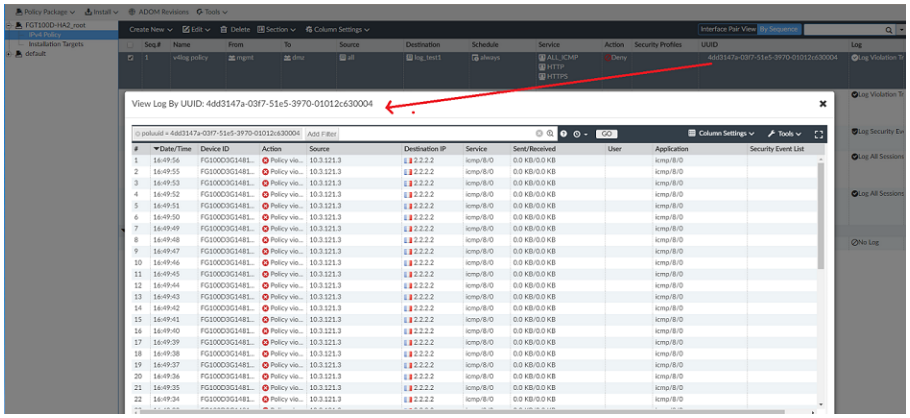
In FortiManager, when you create a report and run it, and the same report is generated in the managed FortiAnalyzer.

To view logs and reports:

1. On FortiManager, go to *Log View*.
   You can view all logs received and stored on FortiAnalyzer.
2. Click the *Policy ID*.
   The policy rule opens.
   If the policy rule doesn't open, ensure that you have imported the policy rules to the ADOM.



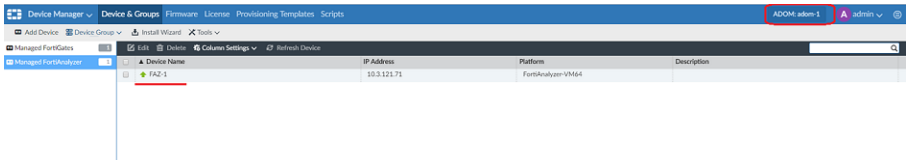
3. Go to *Policy & Objects* > *Policy Packages*, and right-click the policy UUID to search the related policy logs.



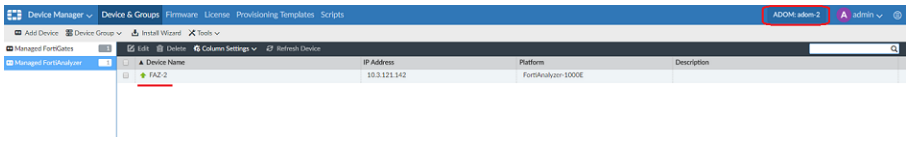
Managing multiple FortiAnalyzer units

FortiManager can manage multiple FortiAnalyzer units, but each FortiAnalyzer must be in its own ADOM. You cannot add a second FortiAnalyzer unit to an ADOM.

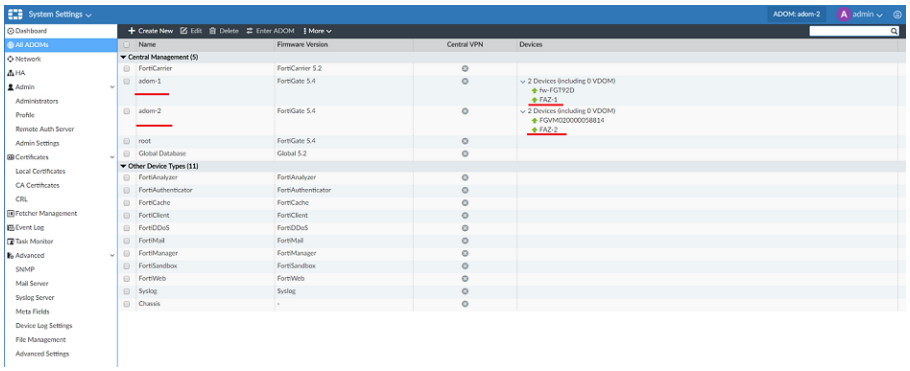
For example, FortiManager can contain the following ADOMs: *adom-1* and *adom-2*, and *adom-1* manages FAZ-1:



The other ADOM, *adom-2*, manages FAZ-2:



Following is another view of the ADOMs with FortiAnalyzer units:



Troubleshooting managed FortiAnalyzer units

This topic describes how to troubleshoot several situations.

Adding FortiAnalyzer failed

If adding FortiAnalyzer failed, enable the following debug command, which will provide error or information in a debug log, and then try adding FortiAnalyzer again.

```
diagnose debug application depmanager 255
diagnose debug enable
```

example: `add_faz_dep_debug.txt`

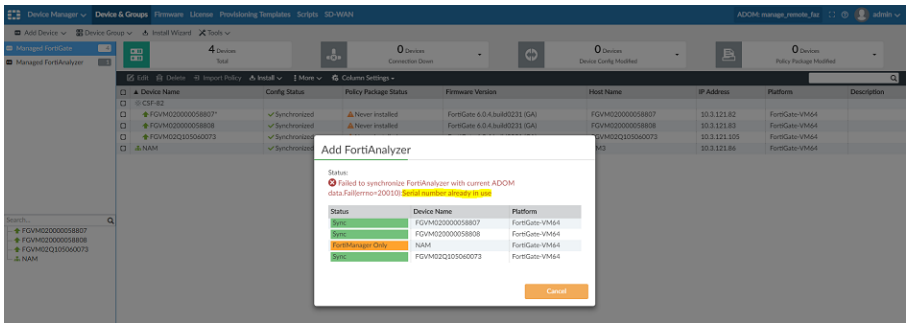
ADOM remains locked on FortiAnalyzer

When you delete FortiAnalyzer from FortiManager, the ADOM on FortiAnalyzer should be unlocked. If the ADOM remains locked, you can use the following command on the FortiAnalyzer unit to unlock the ADOM:

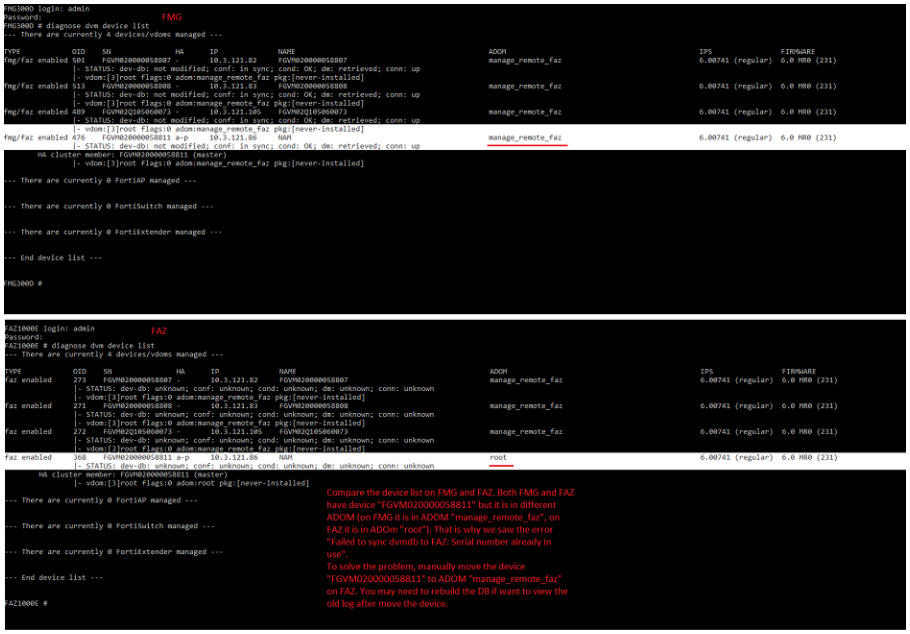
```
FAZ1000E # diag dvm adom unlock
adom ADOM name.
FAZ1000E # diag dvm adom unlock remote-faz
---Deleting DVM lock by remote FortiManager succeeded---
FAZ1000E#
```

Serial number already in use

The Alert console might display the *Serial number already in use* message. FortiManager might also display the *Serial number already in use* message after failing to add FortiAnalyzer.



You can use the `diagnose dvm device list` command on the FortiAnalyzer unit and on the FortiManager unit to see if the same FortiGate unit already exists on the FortiAnalyzer unit, but in different ADOM.



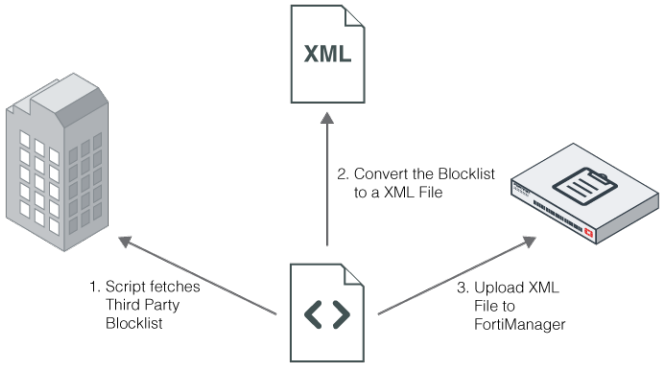
Creating a third party blocklist provider workflow

In this example, you will learn how to use your FortiManager to create a third party blocklist provider workflow.

Overview

You must create a script that will handle the entire workflow. Make sure the script can convert the third party blocklist into a FortiManager XML file.

From an external server, you must schedule the periodic execution of that script. Using the communication tools provided by the third party blocklist provider, the script will fetch the blocklist from the third party.



To create a script to handle a third party blocklist provider workflow:

1. Convert the blocklist to a FortiManager XML file:
   The script will convert the blocklist to a FortiManager XML file. This XML file allows you to assign a category to each URL in the list, in addition to a default category. The default category is used as the return value when there is no match.
   Example of the FortiManager XML file format:

```
<custom_url_list version="1.0">
 <head>
 <default_cate>142</default_cate>
 <description>the description</description>
 </head>
 <body>
 <url_entry>
 <url>http://www.url-0000001.com</url>
 <cate>79</cate>
 </url_entry>
 <url_entry>
 <url>http://www.url-0000001.com</url>
 <cate>28</cate>
 </url_entry>
 </body>
</custom_url_list>
```

   The category value in *<cate></cate>* could be either a normal web filter category or a local category.
2. Upload the XML file into FortiManager:
   The script uses SSH to connect to FortiManager and upload the XML file.
   CLI command:

```
execute fmupdate <ftp|scp|tftp> import custom-url <xml filename> <ftp|scp|tftp details>

  Example:
  #     execute fmupdate scp import custom-url 20M-custom-url.xml 000.000.000.000 00
       tmp/FORTIGUARD my_login my_password
  This operation will replace the current <custom-url> package!
  Do you want to continue? (y/n)y

  Start getting file from remote SCP Host...
  SCP transfer successful.
  Packing installation is in process...This could take some time.
  lccclient command result:Response=202|
```

```
Update successfully
```

In this example, FortiManager will upload the file from the following file:

```
scp://my_login:my_password@000.000.000.000:00/temp/FORTIGUARD/20M-custom-url.xml
```

3. Configure FortiManager to only use its local FortiGuard database or local blocklist database:
   a. Select one of the following:
      - Local FortiGuard database
      - Local blocklist database
      - Or both

```
config fmupdate custom-url-list
   set db_selection <fortiguard-db|custom-url|both>
   end
```

4. Test custom URLs managed by FortiManager:
   a. Use the CLI in FortiManager to send categorization requests for custom URLs managed by FortiManager. Example of the CLI command set:

```
#     diagnose fmupdate fgd-url-rating FGT SN 1 www.foo.com
   url rating flags: 0x2 (2:EXACT_MATCH, 1:PREFIX_MATCH)
   rates according to url: 0x37 0x00 0x00 0x00
   rates according to ip: 0x00 0x00 0x00 0x00
   num_dots:-1, num_slash:-1
   database version: 16.45562
        0 ms
```

   The *FGT SN* can be any FortiGate SN.

   The returned category is in a hexadecimal output: *0x37*.

   In decimal format, the category is *56* or *Web Hosting*.

The memory capacity of the unit determines the number of URLs FortiManager can manage.

5. Specify FortiManager as the FortiGuard server in FortiGate
   a. Go to your FortiGate CLI console and execute the following commands:

```
config system centralmanagement
     set type fortimanager
     set {<IP_address> | <FQDN_address>}
     config serverlist
          edit 1
               set servertype
               update rating
               set serveraddress {<IP_address> | <FQDN_address>}
          next
     end
     set includedefaultservers disable
end
```

For further FortiManager information, refer to the FortiManager Administration Guides available on the Fortinet Document Library.

www.fortinet.com